UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,987	01/22/2007	Toshio Nagasaka	297122US0PCT	4623

22850 7590 06/02/2009

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER
JONES JR., ROBERT STOCKTON

ART UNIT	PAPER NUMBER
4151	

NOTIFICATION DATE	DELIVERY MODE
06/02/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	10/594,987	NAGASAKA ET AL.	
	Examiner	Art Unit	
	ROBERT JONES JR.	4151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 2* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-2* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/29/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 recites the limitation "the other copolymerizable monomer" in lines 5-6. There is insufficient antecedent basis for this limitation in the claim.

Double Patenting

Claims 1 and 2 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 2 of copending Application No. 11/547,166 (referred to hereafter as 166). Although the conflicting claims are not identical, they are not patentably distinct from each other because they are wholly encompassed by the claims of the instant specification.

Claim 1 of 166 requires an impact resistance modifier composed of a multilayered graft copolymer, **comprising** an inner-layer polymer (A) and an outer-layer polymer (B). The instant Claim 1 comprises an intermediate-layer polymer (B) which is substantially identical to the inner-layer polymer (A) of 166, and an outer-layer polymer (C) which is identical to the outer-layer polymer (B) of 166. Furthermore, as the

intermediate-layer polymer (B) of the instant application is not an outer layer, it may be described as being an inner-layer polymer.

The instant Claim 1 additionally recites an innermost-layer polymer (A) which is not included in the claims of 166. However, the transitional term "comprising" utilized in Claim 1 of 166, which is synonymous with "including," "containing," or "characterized by," is inclusive or open-ended and does not exclude additional, unrecited elements or method steps (see MPEP 2111.02).

The language of the conflicting claims is presented below for comparison, with differences highlighted:

	Claim 1 of 11/547,166	**Claim 1 of 10/594,987**
Inner-layer Polymer	an inner-layer polymer (A) obtained by polymerizing monomer components comprising 100 parts by mass of a monomer mixture composed of 70 to 90% by mass of an alkyl acrylate having an alkyl group with carbon number of 1 to 8, 10 to 30% by mass of an aromatic vinyl compound and 0 to 20% by mass of the other copolymerizable monomer and **0.1 to 2 parts by mass** of a polyfunctional monomer	an **intermediate**-layer polymer (B) obtained by polymerizing monomer components comprising 100 parts by mass of a monomer mixture composed of 70 to 90% by mass of an alkyl acrylate having an alkyl group with carbon number of 1 to 8, 10 to 30% by mass of an aromatic vinyl compound and 0 to 20% by mass of the other copolymerizable monomer and **1 to 3 parts by mass** of a polyfunctional monomer [in the presence of the innermost-layer polymer (A).]
Outer-layer Polymer	an outer-layer polymer (**B**) having its Tg within the range of 20 to 80 degrees C and obtained by polymerizing monomer component(s) composed of 50 to 100% by mass of an alkyl methacrylate having an alkyl group with carbon number of 1 to 4, 0 to 50% by mass of an alkyl acrylate having an alkyl group with carbon number of 1 to 8 and 0 to 20% by mass of the other copolymerizable monomer in the presence of **the inner-layer polymer (A);**	an outer-layer polymer (**C**) having its Tg within the range of 20 to 80 degrees C and obtained by polymerizing monomer component(s) composed of 50 to 100% by mass of an alkyl methacrylate having an alkyl group with carbon number of 1 to 4, 0 to 50% by mass of an alkyl acrylate having an alkyl group with carbon number of 1 to 8 and 0 to 20% by mass of the other copolymerizable monomer in the presence of a **polymer which has been made up to the intermediate-layer polymer (B),**

Particle Diameter/Mass Ratio	wherein mass average particle diameter **of the inner-layer polymer (A)** is 200 to 300 nm, and the outer-layer polymer (B) is 30 to 100 parts by mass when the inner-layer polymer (A) is set as 100 parts by mass.	wherein mass average particle diameter of **the polymer which has been made up to the intermediate-layer polymer (B)** is 200 to 300 nm, [**mass ratio (A)/(B) of the innermost-layer polymer (A) to the intermediate-layer polymer (B) is 10/90 to 40/60**] and the **proportion of** the outer-layer polymer (C) is 30 to 100 parts by mass when the **sum of the innermost-layer polymer (A) and the intermediate-layer polymer (B)** is set as 100 parts by mass.

All elements of the inner-layer polymers are identical and are present in identical amounts. All elements of the outer-layer polymers are identical, and are present in identical or overlapping amounts. All particle diameter and mass ratio requirements of 166 are present in the instant Claim 1. Thus, Claim 1 of 166 is not patentably distinct from the instant Claim 1 even though it comprises an additional element.

Claim 2 of 166 is identical in wording to the instant Claim 2, and therefore is not patentably distinct from the instant claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Sugaya et al. (US Pat. No. 6,218,447). Brandrup (Polymer Handbook, cited in applicant's IDS) is herein referred to for extrinsic evidence.

Regarding Claims 1 and 2, Sugaya teaches a resin composition comprising (A) 5 to 50% by weight of a graft copolymer having a multilayer structure and (B) 50 to 95% by weight of a methacrylic resin (col. 2, lines 6-10). Said graft copolymer is incorporated into methacrylic resins in order to improve impact resistance without impairing appearance, transparency, weatherability, gloss, and processability of the methacrylic resins (col. 1, line 64 – col. 2, line 1); therefore, the graft copolymer functions as an impact resistance modifier.

Said graft copolymer is prepared by:

(A-1) polymerizing a monomer mixture (X) comprising (a) an alkyl methacrylate having a C1 to C4 alkyl group and (b) at least one monomer selected from a group which includes alkyl acrylates having C1 to C12 alkyl groups in an (a)/(b) ratio of 40:60 to 100:0 by weight and (c) 0.01 to 10 parts by weight of a polyfunctional monomer, in the presence of (d) 0.01 to 2 parts by weight of a chain transfer agent to give an innermost layer of a crosslinked methacrylic polymer (I) (col. 2, lines 10-23);

(A-2) polymerizing a monomer mixture (Y) comprising (e) an alkyl acrylate having a C1 to C12 alkyl group and (f) at least one monomer selected from the group including an aromatic vinyl monomer in an (e)/(f) ratio of 60:40 to 100:0 and (g) 0.1 to 5 parts by

weight of a polyfunctional monomer, in the presence of said crosslinked methacrylic polymer (I), the (I)/(Y) ratio being 10:90 to 60:40, to give a rubber-like polymer (II) (col. 2, lines 24-35); and

(A-3) polymerizing a monomer component (Z) comprising (h) an alkyl methacrylate having a C1 to C4 alkyl group and (i) at least one monomer selected from the group including an alkyl acrylate having a C1 to C12 alkyl group in an (h)/(i) ratio of 60:40 to 100:0 in the presence of said rubber-like polymer (II), the (II)/(Z) ratio of said rubber-like polymer (II) to said monomer mixture (Z) being 60:40 to 90:10 by weight, to give multilayer graft copolymer (A) (col. 2, lines 36-45).

Section (A-3) constitutes the outermost layer of said graft copolymer. Monomers suggested for use as the alkyl methacrylate (h) include methyl methacrylate (MMA) (col. 5, lines 32-33; col. 3, lines 15-16), and MMA is utilized in Sugaya's examples (col. 10, Table 1). Monomers suggested for use as the alkyl acrylate (i) include butyl acrylate (BA) (col. 5, lines 33-36; col, 3, lines 23-28), and BA is utilized in Sugaya's examples (col. 10, Table 1). As discussed above, Sugaya teaches that the ratio of (h)/(i) is from 60:40 to 100:0; thus, one of ordinary skill in the art will at once envisage utilizing a MMA/BA ratio of from 60:40 to 100:0. Brandrup teaches that the Tg of MMA is 378K (p. 219), and that the Tg of BA is 219K (p. 215). According to the Fox equation (instant application, p. 5, paragraph 2), an outer layer comprising a 60:40 ratio of MMA/BA will have a Tg of 292.9K (19.9^{o}C), and an outer layer comprising a 100:0 ratio of MMA/BA will have a Tg of 378K (105^{o}C). Therefore, Sugaya teaches that the outer layer of said graft copolymer has a Tg within the range of 19.9 to 105^{o}C.

Sugaya further teaches that the average particle size of said graft copolymer is preferably from 1500 to 4000 angstroms (col. 6, lines 19-20), or 150-400 nm.

Said graft copolymer meets the compositional and physical requirements of Claim 1. Said resin composition comprising (A) 5 to 50% by weight of said graft copolymer and (B) 50 to 95% by weight of a methacrylic resin satisfies the requirements of Claim 2.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT JONES JR. whose telephone number is (571)270-7733. The examiner can normally be reached on 5/4/9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Ortiz can be reached on 571-272-1206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katarzyna Wyrozebski/
Primary Examiner, Art Unit 1796
May 22, 2009

RSJ